

the liquid crystal orientation is not destroyed and an input-output having good display quality as a panel can be provided.

In the structure wherein the switches are placed below the liquid crystal display panel, the resolution of the switches is enhanced and an input-output unit with inexpensive liquid crystal display can be provided.

Further, in the invention, there can be provided an input-output unit that can reliably prevent liquid crystal orientation destruction, etc., caused when a liquid crystal display panel is pressed, and can also reliably perform the operation of switch devices, etc., if the liquid crystal display panel is placed on the top of the switch devices, etc., for making the liquid crystal display panel easy to see and providing excellent viewability of images displayed on the liquid crystal display panel.

Furthermore, with use of the shock absorption layer and the reinforcing layer, the viewability is improved, and the protection of the display unit from an external force, and the certainty of input can be increased.

What is claimed is:

1. An input-output unit, comprising:

a display unit having a bendable display screen for displaying information on said bendable display screen, the display screen having a view side and a layer at the view side of the display screen;

a pressure-sensitive input unit containing detection means being provided below the display screen for detecting a position on said bendable display screen in response to press pressure from a view side of said bendable display screen; and

a shock absorption layer having an elasticity that disperses a local stress from the view side of said display screen on the layer at the view side of the display screen and transferring the dispersed stress to said detection means.

2. The input-output unit as claimed in claim 1, wherein said bendable display screen and said detection means therebelow are shaped as a sheet.

3. The input-output unit as claimed in claim 1, wherein said display screen contains any of a liquid crystal display panel, an electroluminescence panel, or a twisting ball panel display.

4. An input-output unit, comprising:

an information input display for displaying various pieces of operation information of an electronic machine and virtual operation buttons corresponding to the operation information on a display screen and enabling a user to enter control information of the electronic machine by pressing the virtual operation buttons, said information input display comprising:

a switch matrix board;

a plurality of input switches placed on said switch matrix board at predetermined pitches;

a flexible information display screen superposed on said switch matrix board, the flexible information display screen being shaped as a sheet and having a view side and a layer at the view side of the information display screen; and

a shock absorption layer having an elasticity that disperses a local stress from a view side of said information display screen on the layer at the view side of the information display screen and transferring the dispersed stress to said switches.

5. The input-output unit as claimed in claim 4 wherein said information display screen comprises a reflection-type liquid crystal panel.

6. The input-output unit as claimed in claim 4 wherein said switch matrix board comprises a membrane board.

7. The input-output unit as claimed in claim 4 wherein said input switches comprise pressure-sensitive switches.

8. An input-output unit, comprising:

a bendable image display panel having an image display device, a view side and a layer at the view side of the image display panel;

means being laminated below said image display panel for sensing coordinates of a position pressed from the view side of said image display panel; and

a shock absorption layer having elasticity that disperses a local stress from the view side of said image display panel on the layer at the view side of the image display panel and transferring the dispersed stress to said coordinate sensing means.

9. The input-output unit as claimed in claim 8 wherein said image display panel is formed of a bendable liquid crystal display panel including a liquid crystal display device, and said coordinate sensing means detects the coordinates of a position of the liquid crystal display panel which is pushed from a view side thereof.

10. The input-output unit as claimed in claim 8, wherein said liquid crystal display panel includes a pair of polarizing plates at a position where the liquid crystal display device is interposed between said polarizing plates, and the shock absorption layer having flexibility is placed between the liquid crystal display device and a polarizing plate positioned on the view side of the liquid crystal display device and wherein a refractive index of the shock absorption layer is set to a value closer to a refractive index of material forming the liquid crystal display device and the polarizing plate than a refractive index of air.

11. The input-output unit as claimed in claim 8 wherein said liquid crystal display panel includes a pair of polarizing plates at a position where the liquid crystal display device is interposed between said polarizing plates, and the shock absorption layer having flexibility is placed between the liquid crystal display device and a polarizing plate positioned on the view side of the liquid crystal display device and a reinforcing plate for protecting the liquid crystal display device is placed below the shock absorption layer.

12. The input-output unit as claimed in claim 11 wherein the shock absorption layer having flexibility is placed between the liquid crystal display device and a polarizing plate positioned on the view side of the liquid crystal display device and a reinforcing plate for protecting the liquid crystal display device and widening a range in which said coordinate sensing means receives pressure is placed below the liquid crystal display device.

13. The input-output unit as claimed in claim 12 wherein elastic moduli of the shock absorption layer, the liquid crystal display device, and the reinforcing plate are set so as to satisfy relation of reinforcing plate>liquid crystal display device>shock absorption layer.

14. The input-output unit as claimed in claim 8 wherein the shock absorption layer is made of a gel resin material or a rubber resin material.

15. The input-output unit as claimed in claim 8 wherein said coordinate sensing means is made of membrane switches.